

MOTEMS COMPLIANCE OF MULTI-USE TERMINALS

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Agenda

- What are Multi-Use Terminals?
- Shared Berth Challenges
- MOTEMS Compliance Challenges
- Take-Aways

What is an Multi-Use Terminal?

- Shared berth marine oil terminal
- Multiple operators/tenants at berth
- Variety of operations on terminal
- Varied vessel traffic
- Operational hierarchy





TEXAS HIGHWAY
KQBE



CONFIDENCE OCEAN

PANAMA

IMO 919994

SAFETY + FIRST

GARAGE DECK

BMH

A





Shared Berth Challenges

- Other tenants can be difficult!
 - Don't understand or care about MOTEMS
 - They want unrestricted wharf access
 - They are the top tenant
- Permanently deployed equipment limited
 - Manifolds & piping
 - Fire suppression system
 - Lighting
 - Secondary containment
- Potential Electrical Hazard Class conflicts **(Beware of cold ironing!!)**
- Potential incompatible mooring & berthing systems/operations

Shared Berth Challenges

- Transfer manifold forced into deck vaults
 - Motorized ESDs/SIVs = Large vaults
 - Large vaults = Heavy covers
 - Difficult to design
 - Difficult to open
 - Difficult to seal
 - Vaults are difficult to ...
 - Operate
 - Maintain
 - Drain
 - Clean
 - Protect









Yellow bollard

Yellow bollard

Yellow bollard

Yellow bollard

Yellow bollard

Blue valve

CMT
X9

Large vertical valve

Pipes and valves

AIR
N7

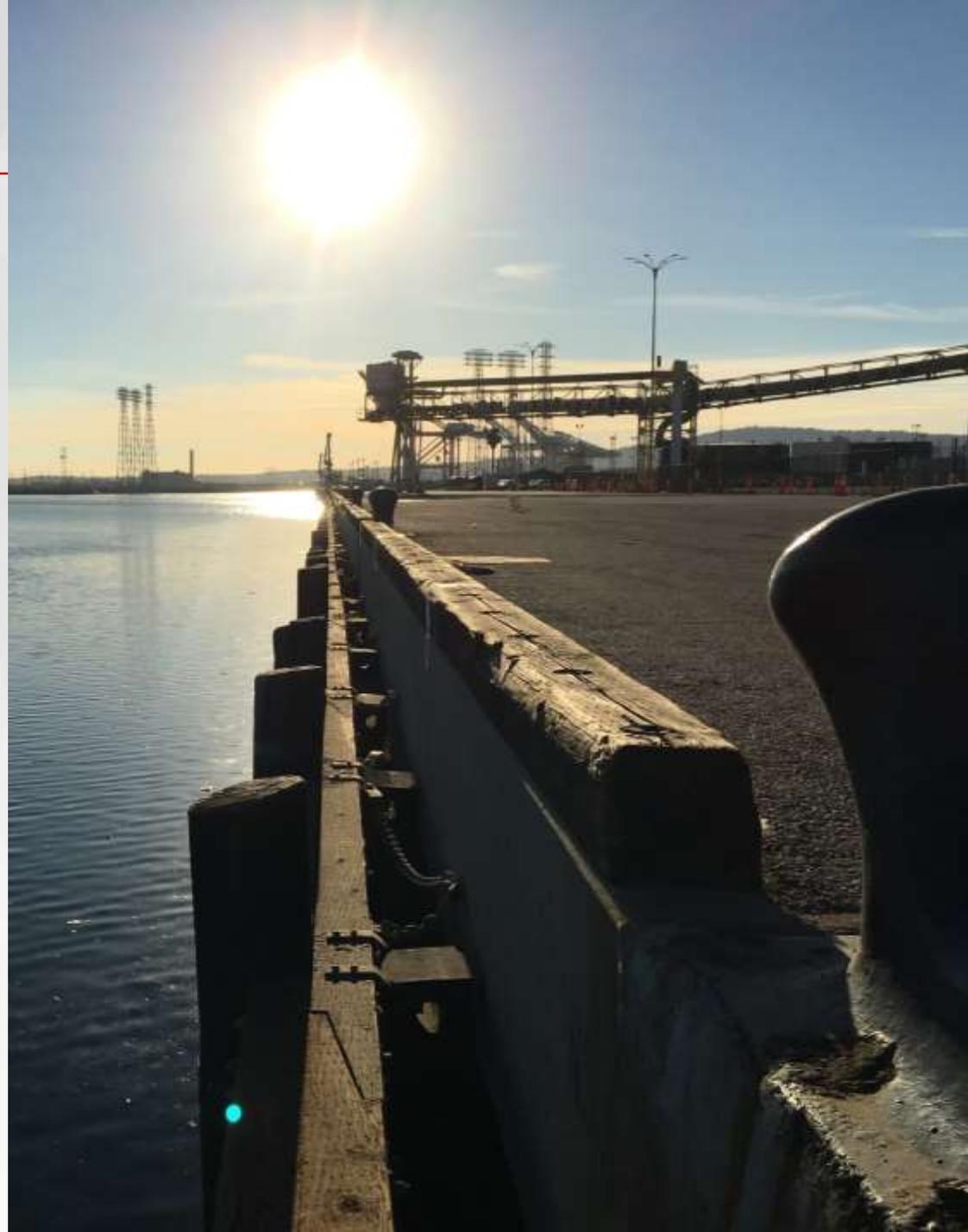
Shared Berth Challenges

- Portable operations
 - Not considered by MOTEMS
 - Difficult for frequent transfers
- MOB/DeMOB each transfer ...
 - Hoses
 - Booms
 - Metering equipment
 - Fire suppression components
 - Containment
 - Additional lighting
 - USCG requires fixed
- Reliance on vessel crane



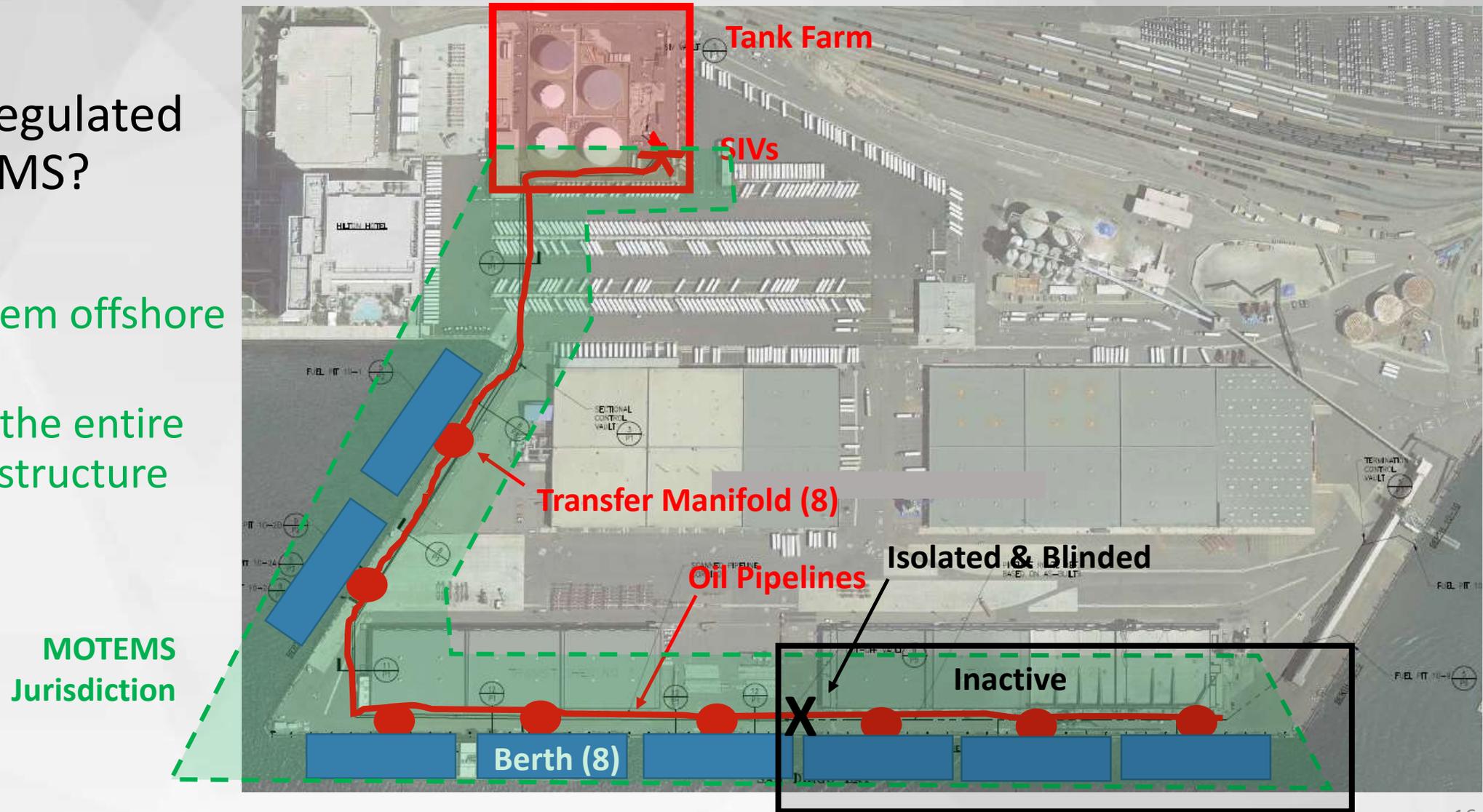
Differences by Division

- Division 1 – MOT Scoping
 - MOTEMS Jurisdiction
 - MOT Oil Spill Exposure Category
 - Management of Change (MOC)



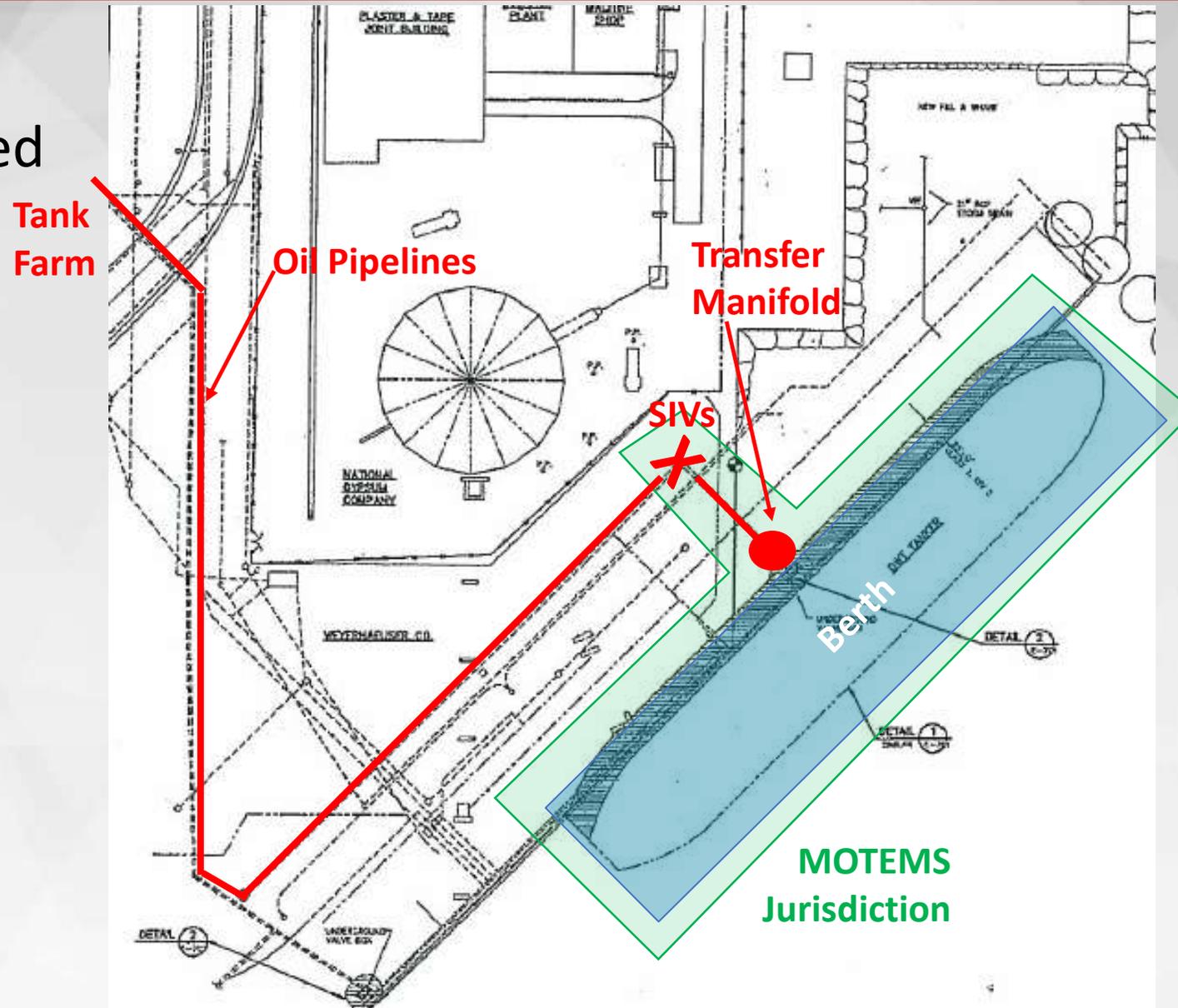
Defining MOT Limits

- What is regulated by MOTEMS?
- A lot!
 - Oil system offshore of SIVs
 - Nearly the entire wharf structure



Defining MOT Limits

- What is regulated by MOTEMS?



Differences by Division

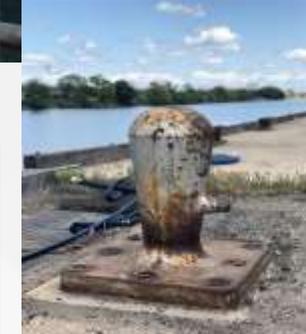
- Division 2 – Audit & Inspection
 - What to look at?
 - Structure supporting oil system
 - Structure supporting pipelines
 - Fender & mooring hardware
 - Critical system supports
 - Don't inspect non-MOTEMS stuff!
- Divisions 3 and 7 – Structural Design
 - Vault cover design difficult
 - Rails
 - Cranes
 - Front loader traffic



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Differences by Division

- Divisions 4 & 6 – Seismic Hazards
 - Mixed use = Mixed seismic criteria
 - Heavy non-MOTEMS equipment
 - Anchorage of portable critical systems
- Division 5 – Mooring & Berthing
 - Incompatible berthing operations
 - Large vessel variety
 - Vessel sliding at berth
 - Vessel stand-off
 - Simultaneous berthing
 - Incompatible mooring arrangements
 - MOTEMS mooring hook requirements
 - Quick-release hooks v. bollards
 - Tension monitoring



Differences by Division

- Division 8 – Fire Protection
 - MOTEMS Critical Systems Assessment
 - Find the real risks
 - Think safe shutdown
 - Minimize MOTEMS exposure
 - MOTEMS Fire Hazard Assessment & Risk Analysis
 - Consider both MOTEMS and non-MOTEMS ops
 - Beware of cold ironing!!!



Differences by Division

- Division 8 – Fire Protection (cont.)
 - Fire Suppression Coverage
 - Required (New & Existing)
 - Extinguishers
 - Hydrants
 - 2 independent streams of fire water
 - Reliable fire water source
 - Required (New)
 - Sprinklers or monitors
 - Foam is not required by MOTEMS
 - Selection and placement of coverage equipment critical to compliance



Differences by Division

- Division 8 – Fire Protection (cont.)
 - Fixed or deployable?
 - Fire hoses
 - Fire monitors
 - Extinguishers
 - Sensors & alarms
 - Only manifold coverage required
 - May be located away





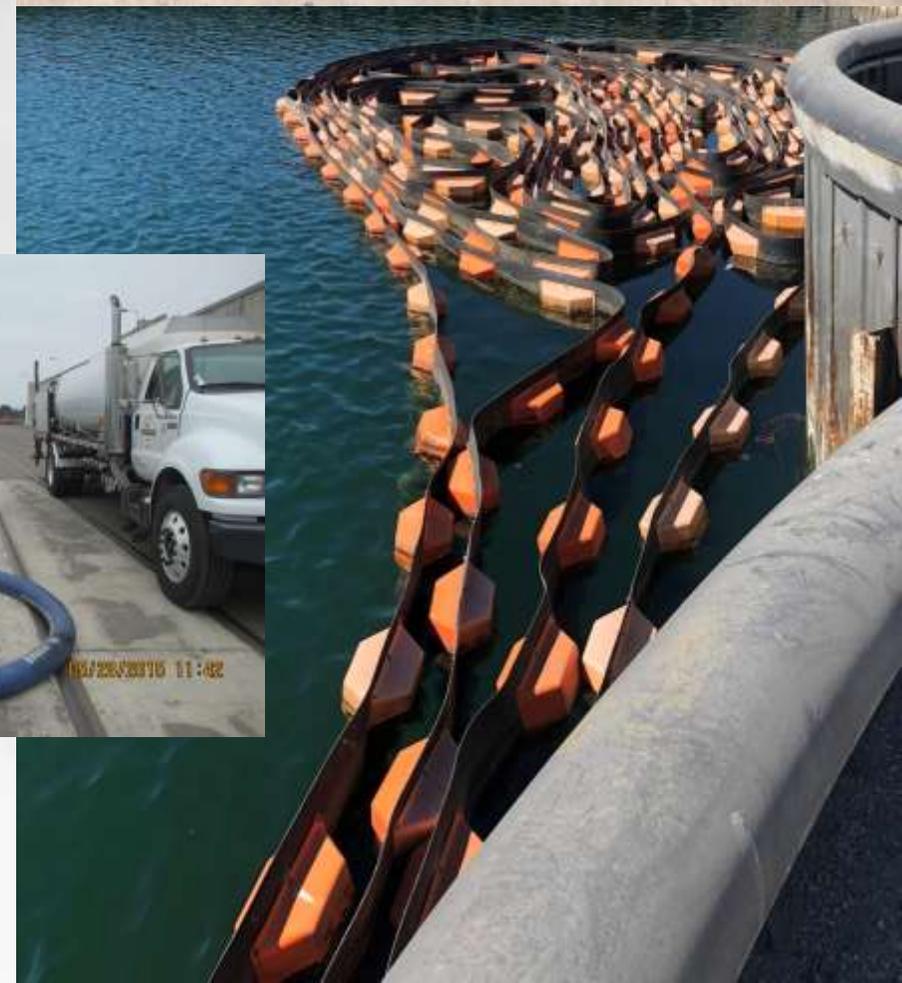
Differences by Division

- Division 9 – Pipelines
 - Buried/Below deck alignments
 - Conflict with MOTEMS
 - Pipe trenches with covers
 - Secondary containment
 - Req'd for vault and hose layout area
 - Storm water drainage/treatment
 - Avoid SUMPS at vaults!
 - Consider portable systems for hoses
 - Small vaults impacts ...
 - Manifold valves
 - Motorized SIVs & ESDs
 - Secondary piping/pumps placement



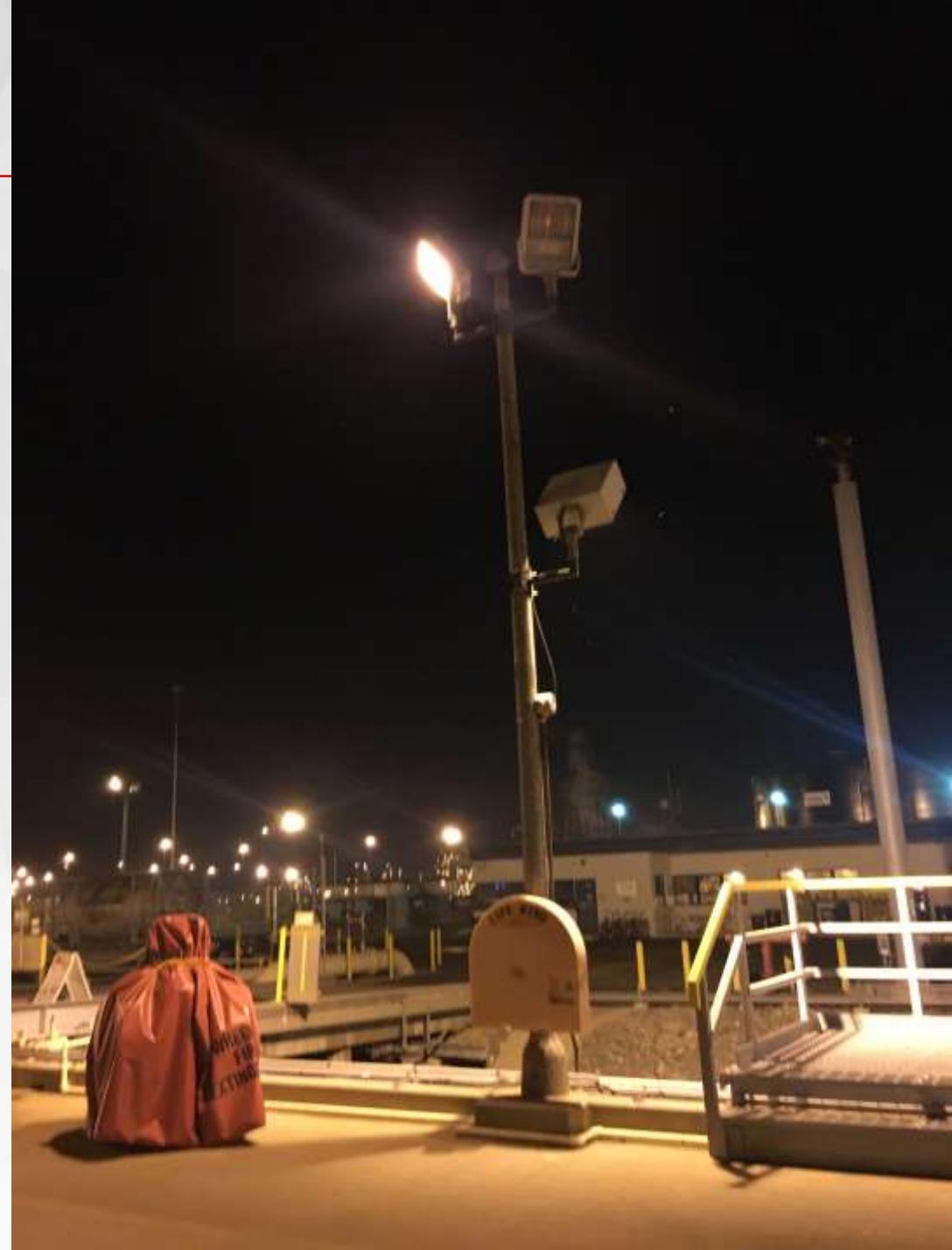
Differences by Division

- Division 10 – Mechanical & Electrical Equipment
 - Hose considerations
 - Mobilization – need forklift or tractor
 - Lots of movements = Extra wear
 - Storage
 - Vapor recovery not an easy issue!
 - Dock Safety Unit placement – USCG
 - Need dirty-water collection system
 - Avoid sumps
 - Shore-to-vessel access
 - Depend on the vessel
 - Boom deployment
 - Spill boom storage



Differences by Division

- Division 11 – Electrical Systems
 - Locating fixed lighting
 - Managing Electrical Hazard conflicts
 - Watch non-MOTEMS equipment
 - Beware of cold ironing!



Take-Aways

- MOTEMS geared for dedicated MOTs, not multi-use terminals
- Multi-use MOT compliance is more challenging, but not impossible!
- Be smart about defining the MOT – Work to minimize MOTEMS footprint
- Use the MOTEMS Critical Systems Seismic Assessment
- Carefully think about your operational design to avoid compliance pains
- Consider deployable resources
- Periodic audits are important safety measure!
- Beware of cold-ironing!